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June 20, 2016

SUBMITTED ELECTRONICALLY VIA ECFS

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, NW
Washington, DC 20554

Re: **Notice of *Ex Parte* Presentation**

GN Docket No. 14-177, ***Use of Spectrum Bands Above 24 GHz for Mobile Radio Services***

Dear Ms. Dortch:

On June 16, 2016, John Hunter, Senior Director, Technology and Engineering Policy for T-Mobile US, Inc. ("T-Mobile"), Russell Fox of Mintz Levin, and I had a single meeting with the following members of the Commission's staff regarding the above-referenced proceeding, which addressed the matters outlined below:

Joel Taubenblatt (WTB)
Blaise Scinto (WTB)
Karen Sprung (WTB)
John Schauble (WTB)
Stephen Buenzow (WTB) (by phone)
Katherine Matraves (WTB) (by phone)
Tim Hilfiger (WTB) (by phone)
Jennifer Salhus (WTB) (by phone)
Michael Ha (OET)
Nicolas Oros (OET)
Ira Keltz (OET)
Bahman Badipour (OET)

Spectrum Aggregation in the Millimeter Wave Bands

In our reply comments in this proceeding, we encouraged the Commission not only to make a sufficient supply of licensed millimeter wave spectrum available, but also to monitor millimeter wave spectrum aggregation and take action if necessary to ensure that there is a competitive marketplace for this spectrum.[1/] More recently, in response to the Wireless Telecommunications Bureau's Public Notice on competition in the wireless marketplace we said that, "[e]xcessive concentration of the input resources necessary for 5G promises long-term harm to competition

1/ *See* Reply Comments of T-Mobile USA, Inc., GN Docket No. 14-177, *et al.*, 11 (filed Feb. 26, 2016) ("T-Mobile Spectrum Frontiers Reply Comments").

and consumers in the form of reduced investment, higher prices, less consumer choice, lower economic growth and diminished innovation."[2/] To ensure that more than just one or two service providers can offer a wide range of 5G services, we urged the Commission in that proceeding to establish a spectrum screen that would apply additional regulatory scrutiny for any proposed transaction that would result in a carrier holding more than one-third of all high-band spectrum. Addressing this topic in our meeting last week, we agreed with the approach recently recommended by the Competitive Carriers Association ("CCA") to prevent excessive spectrum aggregation in the millimeter wave bands. [3/]

In particular, CCA supplemented its comments in this proceeding by proposing that the Commission provide enhanced review for any acquisition of spectrum that would result in the licensee holding more than one-third of the available high-band spectrum or more than one-half of the high-band spectrum in a particular frequency band.[4/] CCA recommended that the Commission employ this two-tiered approach with respect to secondary market transactions and as an *ex ante* spectrum auction policy mechanism.[5/] T-Mobile agrees that this approach would strike the appropriate balance between permitting providers to secure sufficient millimeter wave band spectrum and preventing excessive spectrum concentration. It urges the Commission to adopt rules in this proceeding to prevent excessive aggregation of millimeter wave spectrum for the reasons noted below.

Spectrum Screens Remain Important – The Communications Act requires that the Commission "examine closely the impact of spectrum aggregation on competition, innovation, and the efficient use of spectrum to ensure that spectrum is assigned in a manner that serves the public interest, convenience, and necessity."[6/] Consistent with that directive, the Commission has long imposed limits on excessive mobile broadband spectrum aggregation, recently adjusting the

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2/ *See* Comments of T-Mobile USA, Inc., WT Docket No. 16-137, 11 (filed May 31, 2016) ("T-Mobile Competition Comments").

3/ *See* Letter from Rebecca Murphy Thompson, EVP & General Counsel, Competitive Carriers Association to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-177, *et al.* (filed June 15, 2016) ("CCA Ex Parte Letter"). The Commission asked in the *Notice of Proposed Rulemaking* (1) whether it should adopt band-specific spectrum holding limits for the licensing of the millimeter wave bands, either for individual bands or a combination of the bands; and (2) whether it should include the millimeter wave bands in the spectrum screen currently applied to secondary market transactions. *See Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.*, Notice of Proposed Rulemaking, 30 FCC Rcd. 11878, ¶¶ 191-92 (2015) ("*NPRM*").

4/ CCA Ex Parte Letter at 2.

5/ *Id.*

6/ *See Policies Regarding Mobile Spectrum Holdings*, Report and Order, 29 FCC Rcd. 6133, ¶ 6 (2014) ("*Mobile Holdings Order*"); 47 U.S.C. § 309(j)(3) (mandating that the Commission, in designing systems of competitive bidding, "include safeguards to protect the public interest in the use of the spectrum" and promote various objectives, including (1) "promoting economic opportunity and competition and ensuring that new and innovative technologies are readily accessible to the American people by avoiding excessive concentration of licenses[,]" (2) encouraging "development and rapid deployment of new technologies, products, and services[,]" and (3) promoting "efficient and intensive use" of spectrum.).

spectrum screen to include additional spectrum and to treat concentrations of below-1 GHz spectrum as an enhanced factor in its review of proposed transactions.[7/] T-Mobile has vigorously supported the Commission's actions imposing those limits. In our recently submitted comments in the mobile competition proceeding, we noted that the Antitrust Division of the U.S. Department of Justice has repeatedly explained that the mobile communications market already "exhibits all the hallmarks of a market susceptible to the exercise of market power: high market concentration; significant barriers to entry; vast margins between price and the incremental cost of providing service to an additional customer; and highly concentrated holdings of the critical input resource of spectrum by the two largest providers."[8/] In this type of environment, the value of keeping spectrum suitable for mobile broadband use out of competitors' hands could be quite high.[9/] The Commission has recognized that millimeter wave spectrum will be used for mobile broadband operations,[10/] and as CCA has made clear, "[f]or competitive carriers to offer compelling service alternatives to those provided by dominant carriers, competitive carriers need opportunities to acquire . . . [millimeter wave] spectrum in tandem with low-band spectrum."[11/] Thus, the Commission should include millimeter wave spectrum – as it will also be used to support mobile broadband services – in its screen for enhanced regulatory review.

A One-Third Millimeter Wave Screen is Appropriate – While it is appropriate to impose additional regulatory review of transactions involving excessive aggregation of millimeter wave spectrum in particular, millimeter wave spectrum need not be included in the current mobile broadband spectrum screen. As the Commission has recognized, spectrum in different bands has very different characteristics that impact the coverage, capacity, and service potential of the spectrum.[12/] The Commission has also recognized that carriers need a balance of spectrum resources to compete.[13/] The higher frequency and large bandwidth of the spectrum under consideration in this proceeding will provide greater capacity over a smaller cell compared to lower bands and warrants a screen to help ensure a competitive environment. However, given the relatively large amount of high-band spectrum under consideration, including millimeter wave spectrum in an overall mobile broadband screen will inappropriately skew aggregation metrics for lower bands, allowing licensees to aggregate a large amount of low- or mid-band

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7/ *Mobile Holdings Order* ¶¶ 44, 70-134.

8/ T-Mobile Competition Comments at 11; *see also Mobile Holdings Order* ¶ 62 (citing Comments of the U.S. Dep't of Justice, Antitrust Division, WT Docket No. 12-269, 10-11 (filed Apr. 11, 2013) ("DOJ Comments")); Letter from William J. Baer, Assistant Attorney General, U.S. Dep't of Justice to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-269 (May 14, 2014)).

9/ *See* DOJ Comments at 11.

10/ *See, e.g., NRPM* ¶¶ 4-6.

11/ *See* Comments of Competitive Carriers Association, WT Docket No. 16-137, 11 (filed May 31, 2016).

12/ *See, e.g., Mobile Holdings Order* ¶ 283 (noting that "certain frequencies possess distinct characteristics for the provision of mobile wireless services.") (internal citations omitted).

13/ *See id.* ¶ 63 (stating that "a mix of spectrum holdings provides distinct advantages to providers' ability to compete in the marketplace.").

spectrum without triggering a screen diluted by including over three gigahertz of high-band spectrum.[14/]

Yet a screen across the millimeter wave bands themselves is appropriate. Millimeter wave bands will be a unique input to carriers' networks. As T-Mobile highlighted in its comments in this proceeding, increasing use of data-intensive applications such as video and Internet access has created additional demand for carrier networks.[15/] Millimeter wave bands "could be particularly useful in supporting very high capacity networks" needed to meet this consumer demand, especially by meeting the small-cell needs that will increasingly be deployed in 5G networks.[16/] Therefore, to protect competition in that unique input market, the Commission should adopt a one-third overall screen for the millimeter wave bands as a whole. The Commission took a similar approach when it decided to consider holdings below-1 GHz as an enhanced factor in its general case-by-case review. At that time, the Commission acknowledged that "not all spectrum is created equal."[17/] Spectrum below 1 GHz, the Commission determined, has "distinct propagation advantages for network deployment over long distances, while also reaching deep into buildings and urban canyons."[18/] Just as the Commission found that spectrum below 1 GHz was uniquely valuable for wireless broadband networks, and because counting millimeter wave spectrum in the overall screen would produce unsupportable results, the Commission should also create a separate screen for millimeter wave spectrum.

An In-Band Screen is Also Appropriate – Our comments urged that channel block sizes in the millimeter wave bands "must be proportional to the amount of spectrum available, take into consideration a band's location in the spectrum and promote in-band competition where possible."[19/] To further promote in-band competition, we agree with CAA that the Commission should impose an in-band, in addition to an overall millimeter wave band, limit. While the several millimeter wave bands have similar characteristics, they are not identical and their utility

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14/ Today the spectrum screen, which includes low- and mid-band spectrum, is triggered with the potential acquisition of 194 megahertz of spectrum (approximately one-third of the 580.5 megahertz of suitable and available mobile broadband spectrum). Even if just the current 39 GHz and 28 GHz band were added to the overall spectrum screen, an additional 2250 megahertz of spectrum (1400 megahertz at 39 GHz and 850 megahertz at 28 GHz) would be added to the screen, making the new one-third trigger approximately 943.5 megahertz. That would effectively allow a provider to acquire all of the low- and mid-band spectrum without triggering the screen.

15/ *See* Comments of T-Mobile USA, Inc., GN Docket No. 14-177, *et al.*, 3 (filed Jan. 27, 2016) ("T-Mobile Spectrum Frontiers Comments").

16/ *NRPM* ¶ 6; Kelly Hill, *Exploring the Role of Small Cells in 5G*, RCRWIRELESS NEWS (Mar. 24, 2015), *available at*

http://www.rcrwireless.com/20150324/featured/small-cells-in-5g-tag6#prettyPhoto (discussing the importance of small cells for 5G networks, and noting that millimeter wave frequencies contain "the largest amounts of spectrum as well as the widest transmission bandwidths").

17/ *See Mobile Holdings Order* ¶ 3.

18/ *See id.*

19/ *See* T-Mobile Spectrum Frontiers Comments at 11.

may be different, particularly if the Commission imposes different satellite-sharing mechanisms in each. Therefore, it is critical that carriers have access to each of the millimeter wave bands.

In addition to promoting provider access to all millimeter wave bands, imposing a one-half screen in individual bands would serve the public interest by creating a more diverse ecosystem of end user devices, enhancing innovation and competition. Given the potential imbalance of bands under consideration, a one-third screen for millimeter wave bands could still allow a single entity to acquire an entire band without triggering the screen.[20/] A screen that allows a provider to aggregate more than one half of the spectrum in a band would limit the incentives for and ability of other providers to invest in a band at all, limiting user choice of providers and potentially of device options in that band. Unlike the one-third enhanced factor that the Commission employs for spectrum below 1 GHz, a one-half screen is appropriate because of the threat of excessive aggregation already exists because of current licensees' holdings.[21/]

A Screen is Appropriate for Transactions While a Cap Should be Used for Auctions – It is appropriate to address excessive spectrum aggregation differently in the contexts of transactions and auctions. As noted above, the Commission should use a spectrum screen when evaluating transactions – as it does today, while applying a cap in auctions. As we have explained in the past, spectrum limits at auction would increase regulatory certainty, thereby increasing auction participation and revenues.[22/] Spectrum limits imposed at the start of the auction would also avoid the costs and delays associated with post-auction regulatory reviews and avoid prolonging uncertainty about how spectrum would be allocated. These considerations do not arise in secondary transactions, for which a case-by-case approach gives the Commission flexibility to examine the market conditions and competitive factors specific to particular acquisitions.

[20/] For instance, if the Commission includes the 850 megahertz of spectrum at 27.5-28.35 GHz and the entire 37-40 GHz as a single band, a one-third screen would equal approximately 1,283 MHz. This would allow a single entity to acquire the entire 27.5-28.35 GHz band without triggering the screen.

[21/] As parties in this proceeding have noted, Verizon's proposed lease – and likely ultimate acquisition of the 28 GHz band spectrum held by XO today raises the threat of excessive aggregation. *See, e.g.*, T-Mobile Spectrum Frontiers Reply Comments at 11 (highlighting the Verizon/XO transaction and stressing that the Commission should monitor future spectrum aggregation); Letter from Rebecca Murphy Thompson, EVP & General Counsel, Competitive Carriers Association to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-177, *et al.*, 2 (filed May 20, 2016) ("CCA cautioned against the proposed transactions between XO Holdings and Verizon Communications Inc. The transactions, if approved, would provide Verizon with the vast majority of the available LMDS spectrum in the top markets while eliminating a competitive BDS provider."); *see also* Public Knowledge Petition to Deny, ULS File No. 0007162285, WC Docket No. 16-70, 9-11 (filed May 12, 2016) (urging the Commission to ensure that the Verizon transactions will not lead to excessive spectrum aggregation in the millimeter wave bands). Nevertheless, T-Mobile does not propose that current licensees be required to divest any of their holdings. Instead, the Commission would employ the proposed screens on a prospective basis only.

[22/] *See, e.g.*, Jonathan B. Baker, "Further Comments on Spectrum Auction Rules That Foster Mobile Wireless Competition" (Aug. 2, 2013); *attached to* Letter from Howard J. Symons, Counsel for T-Mobile USA, Inc. to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268, WT Docket No. 12-269 (filed Aug. 2, 2013); Comments of T-Mobile USA, Inc., WT Docket No. 12-269, 7-14 (filed Nov. 28, 2012).

Other Issues

In addition to the foregoing, we addressed the following issues, consistent with the positions we have taken in our comments, reply comments, and other *ex parte* communications in this proceeding.

License Sizes – While the Commission has proposed county-based licensing, we prefer larger license sizes where possible. We recognize that it may be difficult to retain the current license size at 28 GHz (Basic Trading Areas, or "BTAs") because of Rand McNally licensing issues, but there is no impediment to areas larger than counties at 39/37 GHz. That approach would reduce administrative burdens for both the FCC and licensees. If the Commission licenses spectrum at 39/37 GHz on a county basis, where there will be multiple licensees per geographic area, the number of licenses (if based on counties) will significantly increase the complexity of managing the licenses and build out requirements.

Satellite Earth Station Locations **–** While T-Mobile is not opposed to sensibly sharing spectrum where possible, satellite earth stations should retain their current status, supplemented by potential auction participation and market-based mechanisms to create greater rights. Any future earth station deployment must be in areas and using methods that will limit any impact with very low population density (0.1% of the census tract population within 200 meter coordination zone) and exclude areas that support transient populations (both as Verizon suggests),[23/] not the list proposed by EchoStar and AT&T.[24/] The EchoStar/AT&T formulation would, as Nextlink demonstrated, allow satellite use in wide swaths of high-population areas, destroying utility for terrestrial services.[25/] Existing earth stations may continue to operate as-is, so current investments will not be stranded. For 28 GHz, that means that earth stations should continue to be licensed on a secondary basis only. Increased protection can be acquired through auction or the secondary market. Secondary sites should only be in the areas noted above. There should be no spectrum access system or similar database-driven access to the band by satellite or other operations. The Commission should impose limits on radiation towards the horizon. For 39 GHz, existing rules should continue to govern receive station authorizations, subject to the geographic restrictions noted above. Because there are no satellite operations there now, the 39/37 GHz band represents a unique opportunity to dedicate millimeter wave spectrum for 5G terrestrial operations without potential limitations imposed by other services. The Commission implemented the soft segmentation approach specifically to encourage satellite interests to focus attention above 40 GHz while providing for terrestrial operations below 40 GHz. Any

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23/ *See* Letter from Carla Rath, Vice President, Wireless Policy Development, Verizon to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-177, *et al.*, at 2-3 (filed June 14, 2016).

24/ *See* Letter from Stacey G. Black, Assistant Vice President – Federal Regulatory, AT&T Services, Inc. and Jennifer A. Manner, Vice President, Regulatory Affairs, EchoStar Corp. to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-177, at Addendum (filed Apr. 15, 2016).

25/ *See* Letter from Michele C. Farquhar, Counsel to Nextlink Wireless, LLC and XO Communications, LLC to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-177, *et al.*, at 4 (filed May 31, 2016) ("The AT&T-EchoStar 'urban core' proposal omits massive areas of high population density where 5G services will be prevalently used and would therefore significantly deter deployment of 5G services.").

consideration of modifying rules to increase shared satellite access in the 37-40 GHz band should only occur in the context of a review of the entire 37-42.5 GHz band that would increase access to spectrum for terrestrial services.

Terrestrial Operation Impacts on Satellite Reception – The recent submission by Ericsson demonstrates that there will be no impact on satellite reception from aggregate terrestrial operations.[26/] Accordingly, there should be no aggregate limits skyward – there will be no impact on satellite operations because of non-uniform nature of base station deployment throughout a spot beam. As Ericsson points out, there would need to be 9.55 million end-user transmitters within the spot beam to impact satellite use.[27/] As it further notes, terrestrial transmissions will be directional, and would not generally be pointed at the sky in any case.[28/]

37 GHz Band – We urged the Commission not to adopt the proposed hybrid approach to the band and instead authorize the band for licensed, commercial use, under the same rules as the 39 GHz band. We stressed that the Commission should not rely on the licensing mechanism adopted for use in the 3.5 GHz band, which remains untested and which would introduce unnecessary uncertainty to deployment in this spectrum. We recognize that there may be sharing required with federal users in this spectrum, but noted the success we achieved in the past coordinating with federal users in the AWS-1 spectrum and our current successful efforts to coordinate use of AWS-3 spectrum.

Performance Requirements – We noted that the existing performance requirements are not necessarily appropriate for applications that will be supported by millimeter wave band spectrum, which may differ from how mobile broadband spectrum is used today. We also reiterated our support for a potential "warehousing" fee that would permit licensees to continue to pay for spectrum (beyond what they pay in an auction) when it remains unused. We noted our support of postponing performance obligations for incumbent licensees, requiring them to meet those requirements applicable to 5G services, rather than current operations. However, we urged that if current performance obligations are retained, they should be applied in the context of the geographic areas in which licenses are currently issued, regardless of how the Commission may re-issue licenses to incumbent licensees. In particular, we noted that 28 GHz band licensees are now required to meet performance requirements on a BTA-wide basis and performance requirements should continue to be imposed on that level even if licenses are re-issued for individual counties (*i.e.,* there should be no county-based requirement for current performance metrics).

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Pursuant to Section 1.1206(b)(2) of the Commission's rules, an electronic copy of this letter is being filed for inclusion in the above-referenced docket and copy of this letter has been sent to

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26/ *See* Letter from Mark Racek, Sr. Director, Spectrum Policy, Ericsson to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-177, *et al.* (filed June 15, 2016).

27/ *See id.* at 8.

28/ *See id.* at 1-3, 7-8.

all Commission staff with whom we met. Please direct any questions regarding this filing to the undersigned.

Respectfully submitted,

/s/ Steve B. Sharkey

Steve B. Sharkey
Vice President, Government Affairs
Technology and Engineering Policy

cc: (each via e-mail)
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